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ABSTRACT

This annotated bibliography identifies issues affecting the on-line teaching environment by assembling a variety of quantitative and qualitative studies. Studies in the bibliography are divided into two major categories: (1) topical studies, which contain papers that focus primarily on one issue affecting teaching on-line (student collaboration/problem solving, e-mail, gender issues, learning styles, teaching strategies, models for on-line courses, and institutional issues); and (2) general studies, which are broader in scope and typically address either broad or multiple issues involved in teaching on-line. The general category is subdivided by research type (general or multiple issues, case studies, and content analysis/historical studies). Within each section, studies are sorted by the primary author's last name. Bibliographic information is followed by the World Wide Web address of any full-text version of the study, key words, a classification of the type of research, and a short description of the paper. (SM)

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RUNNING HEAD: Issues Affecting Teaching On-Line

Issues Affecting Teaching On-Line: An Annotated Bibliography

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Abstract

There are many issues involved in teaching on-line. What models for this environment exist? How can institutions of higher education support such an environment? What strategies can instructors employ? What learner characteristics do students in this environment possess? While periodicals are replete with opinions and editorials of the "see what I did" variety, there is little in the way of scholarly research on these issues. This annotated bibliography attempts to identify issues affecting the on-line teaching environment by assembling a variety of quantitative and qualitative studies.

Issues Affecting Teaching On-Line:
An Annotated Bibliography

On-line learning, on-line teaching, web-based learning, asynchronous learning networks, computer mediated conferencing, technology mediated learning, etc. are terms that are used (sometimes interchangeably) to denote learning environments in which at least some of the interactions between students and instructors are conducted via networked computers. The specific components of such environments may vary, but typically e-mail, bulletin boards, and / or chat tools are included. Some of these tools have been commonly available for decades, but in recent years, the growing popularity of the world wide web has brought about an increased interest in teaching on-line within higher education (as even a cursory survey of conference agendas will show).

There are many issues involved in teaching on-line. What models for this environment exist? How can institutions of higher education support such an environment? What strategies can instructors employ? What learner characteristics do students in this environment possess?

While periodicals are replete with opinions and editorials of the "see what I did" variety, there is little in the way of scholarly research on these issues. The studies that have been written often produce findings that are not widely generalizable. (Perhaps it is because the nature of the on-line environment involves rapid technological change, but even papers dated only four years ago may detail studies that are no longer relevant.) Of these studies, most identify themselves as "qualitative," although many of these are spurious, veiling anecdotes in the language of research. Quantitative studies can be found, but often the research designs are weak or the findings are out of date. Many papers summarize prior research and attempt to identify patterns, principles, and pedagogical techniques.

This annotated bibliography attempts to identify issues affecting the on-line teaching environment by assembling a variety of quantitative and qualitative studies. It is noted at that outset that for the reasons indicated above, the studies cited here may not be as strong in design as studies on other topics. Perhaps, eventually the number and quality of these studies will increase, and perhaps bibliographies like this one will help facilitate this process.

Studies in this bibliography are divided into two major categories: "topical studies" and "general studies." Topical studies contain those papers that tend to focus primarily on one issue affecting teaching on-line (e.g., student collaboration / problem solving). General studies are broader in scope and typically address either broad or multiple issues involved in teaching on-line. This category is sub-divided by research type (e.g., case studies, content analysis, general quantitative studies, etc.). Within each section, studies are sorted by the primary author's last name. Bibliographic information is followed by the web address of any full-text version of the study, key words, a classification of the type of research, and a short description of the paper.

Topical Studies

Student Collaboration / Problem Solving

Benbunan-Fich, R. & Hiltz, S. (1999). Educational applications of CMCS: solving case studies through asynchronous learning networks. Journal of Computer Mediated Communications, 4 (3) [no page numbers].

Full text on-line: http://www.ascusc.org/jcmc/vol4/issue3/index.html
Key Words / Frequently Occurring Terms: computer-mediated conferencing; aln; case studies
Type: Quantitative / quasi-experimental
Description: Case studies were solved by students in one of four groups: individual manual, individual on-line, group manual, or group on-line. Case studies were evaluated by independent judges for length and writing quality. Student perceptions of the activity are also presented. A very clear and concise overview of themes in the computer-mediated conferencing literature is presented in the literature review. A strong research design.

Foley, G. & Schuck, S. (1998).Web-based conferencing: pedagogical asset or constraint? Australian Journal of Educational Technology, 14(2), 122-140.

Full text on-line: N/A
Key Words / Frequently Occurring Terms: web-based conferencing; collaborative learning; pedagogy
Type: Qualitative / case study
Description: The potential of "web-based conferencing" to enhance learning about mathematics and mathematics education was examined. In particular, an emphasis was placed upon the nature of collaborative learning in this environment. Data collected from pre and post course surveys and reflective journals were analyzed. This is a very thorough qualitative design.

Hiltz, S. (1998). Collaborative learning in asynchronous learning Networks: building learning communities. (From [Proceedings of WebNet 98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A
Key Words / Frequently Occurring Terms: collaborative learning; aln; learning communities; computer-mediated conferencing
Type: Summary of prior research
Description: This paper describes the results of numerous prior studies in an attempt to answer the question, "Is online collaborative learning really superior to using the web for students to individually interact with educational materials?"

Ingebritsen, T. S. (1998). Problem-based Learning in an On-line Course: A Case Study. (From [Proceedings of WebNet 98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A
Key Words / Frequently Occurring Terms:
Type: Qualitative / case study
Description: Students worked in on-line groups to make decisions in a simulation scenario. Pre and post test scores and writing quality assessment of students are presented.

Straus, S.G., (1996).Getting a clue: the effects of communication media and information distribution on participation and performance in computer mediated and face-to-face groups. Small Group Research, 27 (1), 115-142.

Full text on-line: N/A
Key Words / Frequently Occurring Terms: group process; extroversion; computer-mediated communication; synchronous
Type: Quantitative / quasi-experimental

Description: Group dominance, student satisfaction, and group performance of students using a synchronous computer-mediated communication system were assessed in relation to students in a face-to-face environment. Very clear methodology and data analysis is provided.

Yaverbaum, G. J. (1998). Problem solving in the virtual classroom: a study of student perceptions related to collaborative learning techniques. (From [Proceedings of WebNet 98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A
Key Words / Frequently Occurring Terms: collaboration; asynchronous; student perceptions; group process; group outcomes
Type: Quantitative / quasi-experimental
Description: Students worked either in face-to-face groups or in asynchronous groups to perform a group task. Data are presented on student perceptions of both the group process and satisfaction with the outcome. This study lacks enough detail to be truly replicable and doesn't completely follow research paper conventions, but the actual research design is strong.

E-Mail

D'Souza, P.V. (1991).The use of electronic mail as an instruction aid: an exploratory study. Journal of Computer-Based Instruction, 18 (3), 106-110.

Full text on-line: N/A
Key Words / Frequently Occurring Terms:
Type: Quantitative / quasi-experimental
Description: Students in the treatment group received course information and assignments via e-mail while the control group received traditional handouts. The effect this difference in communication had on assignment grades and final grades was measured. A brief review of prior studies involving instructional uses of e-mail is presented in the paper. The sample size of this study is very small.

Gender Issues

Blum, K. D. (1999).Gender differences in asynchronous learning in higher education: learning styles, participation barriers and communication patterns. Journal of Asynchronous Learning Networks, 3, (1) [no page numbers].

Full text on-line: http://www.aln.org/alnweb/journal/jaln_Vol3issue1.htm#Blum
Key Words / Frequently Occurring Terms: gender differences; distance education; computer-mediated communication; higher education; distance learning; learning styles; participation
Type: Qualitative / content analysis

Description: Software was used to analyze the communication of students using an on-line "bulletin board." Correlations were sought between genders, learning styles, and participation tendencies. The research design is strong in this study, but the author's writing style is somewhat verbose.

Herring, S. (1994).Gender differences in computer-mediated communication: bringing familiar baggage to the new frontier. [On-Line]. Available: http://www.cpsr.org

Full text on-line: see above
Key Words / Frequently Occurring Terms: computer mediated communication; gender; posting styles; protocols
Type: Qualitative / content analysis
Description: Transcripts of a discussion list were analyzed and an anonymous follow-up survey was administered to list subscribers. Data from these efforts are presented in light of prior research findings.

Learning Styles

Becker, D. & Dwyer, M. (1998). The impact of student verbal/visual learning style preference on implementing groupware in the classroom. Journal Of Asynchronous Learning Networks, 2, (2) [no page numbers].

Full text on-line: http://www.aln.org/alnweb/journal/jaln_vol2issue2.htm#becker
Key Words / Frequently Occurring Terms: groupware; verbal/visual learning style
Type: Quantitative / survey research
Description: Students' inclinations toward being more verbal or visual were correlated with the students' perceptions about the effectiveness of using Lotus Notes / Learning Space (an on-line conferencing / groupware tool). The research design is strong in this study.

Teaching Strategies

Hawisher, G. E. & Pemberton, M. A. (1997) Writing across the curriculum encounters asynchronous learning networks or WAC meets up with ALN. Journal of Asynchronous Learning Networks, 1 (1) [no page numbers].

Full text on-line: http://www.aln.org/alnweb/journal/jaln_Vol1issue1.htm#hawisher
Key Words / Frequently Occurring Terms: computer networks; computers and composition; online writing labs; online forums; electronic conferences; teaching of writing
Type: Qualitative / content analysis
Description: Analysis of students' on-line discussion transcripts in two English courses and one engineering course. Several actual student postings are given as examples. Pedagogical principles guiding on-line writing assignments are shared.

Paulsen, M. (n.d.). The online report on pedagogical techniques for computer-mediated communication. [On-Line]. Available: http://www.nettskolen.com/alle/forskning/19/cmcped.html

Full text on-line: see above
Key Words / Frequently Occurring Terms: computer mediated communications; techniques; one alone; one-to-one; one-to-many; many-to-many
Type: Summary of prior research
Description: This study examines many prior articles and puts forth a classification for computer mediated communications techniques. A great many techniques are listed within the four categories. This paper began as an on-line brainstorming session at an international distance education conference with contributions from many in this field. The literature base for this paper is extensive!

Model(s) for On-Line Courses

Carswell, L., Thomas, P., Petre, M., Price, B. & Richards, M. (1999). Understanding the 'electronic' student: analysis of functional requirements for distributed education. Journal of Asynchronous Learning Networks, 3 (1) [no page numbers].

Full text on-line: http://www.aln.org/alnweb/journal/jaln_Vol3issue1.htm#Carswell
Key Words / Frequently Occurring Terms: internet distance education; virtual campus; distance learning; distance teaching; electronic student; student expectations
Type: Quantitative / survey research
Description: A "paper-based" distance education institution surveys students as a basis for changing to a web-based model. Extensive information on the model is given. Data analysis is almost non-existent, and the research design is very weak

LaRose, R., Gregg, J. & Eastin, M. (1998). Audiographic telecourses for the web: an experiment. Journal of Computer Mediated Communications, 4 (2) [no page numbers].

Full text on-line: http://jcmc.huji.ac.il/vol4/issue2
Key Words / Frequently Occurring Terms: cost-effectiveness; audiographic; telecourse; student achievement; teacher immediacy; student attitudes
Type: Quantitative / quasi-experimental
Description: This study looks at the role of teacher immediacy, student achievement, and student attitudes in a course using web pages and streaming audio vs. a traditional face-to-face course. The paper also delineates several alternative models of on-line courses and their relative cost effectiveness. The research design is also quite strong.

Schmidt, M. (1998). Online art history: design, development, and review of an interactive course. (From [Proceedings of WebNet 98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A

Key Words / Frequently Occurring Terms: course design; course structure; course management; assessment; instructional policies
Type: Qualitative / case study
Description: An overview of one course's transition from the face-to-face to the on-line environment. A description of the course structure, underlying technology, and some of the instructional issues is presented, although this article doesn't contain actual research.

Svensson, L. (1998). Web Education for those who don't know how but want to, and for those who know how but don't want to. (From [Proceedings of WebNet 98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A
Key Words / Frequently Occurring Terms: interface; faculty/author; templates; course design
Type: Qualitative / case study
Description: Although weak in actual research, this descriptive article identifies a number of on-line course design strategies based on prior studies.

Witmer, D. (1998). Staying connected: a case study of distance learning for student interns. Journal of Computer Mediated Communications, 4 (2) [no page numbers].

Full text on-line: http://jcmc.huji.ac.il/vol4/issue2/index.html
Key Words / Frequently Occurring Terms: internships;
Type: Qualitative / case study
Description: To address a number of recurrent problems with a summer internship program, an "on-line" intervention involving web pages, e-mail, a listserv, and facsimile machines was implemented. Data are presented which document the success of the program.

Institutional Issues

Beller, M. (1998). The crossroads between lifelong learning and information technology a challenge facing leading universities. Journal of Computer Mediated Communications, 4 (2) [no page numbers].

Full text on-line: http://jcmc.huji.ac.il/vol4/issue2/index.html
Key Words / Frequently Occurring Terms: leading universities; support; initiatives; technology mediated learning; distance learning
Type: Summary of prior research
Description: By summarizing prior literature related to university approaches to technology mediated learning, several models for higher education are presented.

Sorg, S., Truman-Davis, B., Dziuban, C., Hartman, J. & Juge, F. (1998). Faculty development, learner support and evaluation in ALN programs. (From [Proceedings of WebNet

98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A
Key Words / Frequently Occurring Terms: distance aln; campus-based aln; technology infrastructure; institutional support
Type: Qualitative / case study
Description: A description of the evolution and on-going support of one university's on-line initiatives.

Truman-Davis, B. (1998). On-line with the future: web-based program development at the University of Central Florida, designing a university for the 21st century. (From [Proceedings of WebNet 98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A
Key Words / Frequently Occurring Terms: institutional support; on-line programs;
Type: Qualitative / case study (and summary of prior research)
Description: One university's institutional model for developing on-line degree programs is presented in the context of a summary of existing literature on the subject. Recommended principles to follow are offered. No data are presented.

Tuttle, J. & Simione, A. (1999). Using web-based course materials as a change agent: creating a technology community through diffusion of innovation theory. (From [Proceedings of WebNet 98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A
Key Words / Frequently Occurring Terms: innovation theory; community; faculty; adoption;
Type: Qualitative / case study
Description: One institution's development of on-line courses is evaluated in terms of Innovation Theory. Faculty are classified by "adopter category."

General Studies

General or multiple issue quantitative studies

Alavi, M. (1994). Computer-mediated collaborative learning: an empirical evaluation. MIS Quarterly. June, 150-174.

Full text on-line: N/A
Key Words / Frequently Occurring Terms: computer-mediated learning; cooperative learning; computer-supported team learning; educational technology
Type: Quantitative / quasi-experimental

Description: Skill development, learning, and interest in learning of students using computer-mediated conferencing as a part of face-to-face classes were assessed with reference to students in a traditional face-to-face class with no computer-mediated conferencing. Acceptable detail on methodology is provided. A thorough review of collaborative learning literature is presented.

Hiltz, S. (1997). Impacts of college-level courses via asynchronous learning networks: some preliminary results. Journal of Asynchronous Learning Networks, 1 (2) [no page numbers].

Full text on-line: http://www.aln.org/alnweb/journal/jaln_Vol1issue2.htm#Hiltz
Key Words / Frequently Occurring Terms: virtual classroom; aln; collaborative learning; computer mediated communication; computers and education
Type: Quantitative / survey research
Description: Status update of an on-going study. A summary of various student perceptions (and some less detailed faculty perceptions) is given. The research design is very weak but some of the insights are interesting.

Case Studies

Davidson-Shivers, G. & Rasmussen, K. Collaborative instruction on the web: students learning together. (From [Proceedings of WebNet 98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A
Key Words / Frequently Occurring Terms:
Type: Qualitative / case study
Description: Although the title of this paper uses the word "collaboration," this study is a fairly broad look at two courses and the strategies used to facilitate communication. Little actual data are shared, although the author states that many data were collected.

Content Analysis / Historical Studies

Berge, Z. & Collins, M. (1993). Computer conferencing and online education. The Arachnet Electronic Journal on Virtual Culture, 1 (3).

Full text on-line: www.lib.ncsu.edu/stacks/e/ejvc/aejvc-v1n03-berge-computer.txt
Key Words / Frequently Occurring Terms: computer mediated conferencing; computer mediated communication;
Type: Summary of prior research
Description: This article uses earlier studies to give a broad overview of "computer conferencing." Various features of the medium are presented. One section of the paper focuses on educational uses of computer conferencing. Works cited identify pedagogical benefits and some strategies for enhancing student-to-student interaction.

Paulsen, M. (n.d.). Teaching methods and techniques for computer-mediated communication. [On-Line]. Available: http://www.nettskolen.com/alle/forskning/22/icdepenn.htm

Full text on-line: see above
Key Words / Frequently Occurring Terms:
Type: Summary of prior research
Description: Drawing on prior studies, the author delineates elements of the "system" involved in on-line teaching: learners, teacher, content, methods, techniques, and devices.

Paulsen, M. (1998). The Online Teaching System. [On-Line]. Available: http://home.nettskolen.nki.no/~morten/DEOSNEWS/DEOSarticles_by_MFP/Vol8number07.txt

Full text on-line: see above
Key Words / Frequently Occurring Terms: system; elements; learner characteristics
Type: Summary of prior research
Description: Based on a review of prior research, the author identifies the elements that comprise the "system" in which on-line teaching occurs. Constraints, demands, and choices of the system are discussed.

Reeves, T. & Dehoney, J. (1998). Cognitive and social functions of course web sites. (From [Proceedings of WebNet 98 CD-ROM], Charlottesville, VA: Association for the Advancement of Computing in Education [Producer and Distributor].)

Full text on-line: N/A
Key Words / Frequently Occurring Terms: course management; web site functions; learning environments; social functions
Type: Qualitative / content analysis
Description: A sample of faculty-developed "course web pages" supporting face-to-face courses was analyzed in order to identify functions served by these web pages based upon a "learning environments" model. Social functions of these web pages were analyzed as well. Also, faculty were interviewed to follow-up on factors identified in the content analysis. This is an excellent study.